

Appl. No. 10/671,461
Amendment dated: May 12, 2005
Reply to OA of: February 18, 2005

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1(currently amended). A deep trench structure manufacturing process, comprising the steps of:

providing a substrate;

forming a deep trench in said substrate;

forming a dielectric layer in said deep trench, said dielectric layer covering the sidewall and bottom of the deep trench;

filling the deep trench with a first polymer conductive layer;

removing a portion of said dielectric layer not covered by said first polymer conductive layer;

refilling the deep trench with another dielectric layer, said another dielectric layer covering a portion of the sidewall of the deep trench not covered by said first polymer conductive layer;

partially removing unnecessary portion of said another dielectric layer, while leaving at least a portion thereof filled in a gap between the sidewall of the deep trench and the first conductive layer;

forming a collar oxide layer in the deep trench, said collar oxide layer covering a portion of the sidewall of the deep trench not covered by the dielectric layers;

filling the deep trench with a second polymer conductive layer;

removing a portion of said collar oxide layer not covered by said second polymer conductive layer; and

filling the deep trench with a third polymer conductive layer.

2(original). The process as recited in Claim 1, wherein the material of said dielectric layer is the same as that of said another dielectric layer.

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3(original). The process as recited in Claim 2, wherein the material of said dielectric layer and said another dielectric layer is nitride.

4(original). The process as recited in Claim 3, wherein the material of said dielectric layer and said another dielectric layer is silicon nitride.

5(original). The process as recited in Claim 1, wherein said another dielectric layer is a nitride layer.

6(original). The process as recited in Claim 5, wherein the material of said another dielectric layer is silicon nitride.